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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,530	03/30/2001	Taizo Miyazaki	381NP/49752	1230

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EXAMINER	
WAKS, JOSEPH	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 05/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/806,530	MIYAZAKI ET AL.	
	Examiner	Art Unit	
	Joseph Waks	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-11 and 16-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-11 and 16-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-3, 5, 6** are rejected under 35 U.S.C. 102(b) as being anticipated by **Kosaka et al. (US 4,059,076)**.

Kosaka et al. disclose invention as claimed: front stage reaction means 14, 18 for receiving a raw material HC and generating a reaction product H_2, CO (having higher chemical energy and different in combustion property than HC) by receiving mechanical power from outside the system in a first mode and producing mechanical power generated by chemical reaction for outputting to the outside in a second mode, a rear stage reaction means 10 for receiving the reaction product to generate energy, the front stage and the rear stage reaction means connected through a heat transfer means 50.

Re claim 5, in column 2, line 6, **Kosaka et al.** disclose the system as being used as an automotive engine. The automotive engines inherently include electric motor starter converting electrical energy to mechanical energy and alternators converting mechanical energy to electrical. Therefore, applicant's claimed front stage reaction means comprising energy

converting means for converting electric energy to mechanical power or mechanical power to electric energy are inherent to the **Kosaka et al.** disclosed system.

3. **Claims 1-3, 5-7** are rejected under 35 U.S.C. 102(b) as being anticipated by **Ankersmit et al. (US 5,417,951)**.

Ankersmit et al. disclose invention as claimed: front stage reaction means K, B and R for receiving a raw material through pipes 1 and 13 to generate a reaction product having higher chemical energy and different in combustion property than the raw material by receiving mechanical power from turbine T outside the system in a first mode and producing mechanical power in the turbine generated by chemical reaction in the combustion chamber B for outputting to the outside in a second mode, a rear stage reaction means in form of a fuel cell FC for receiving the reaction product to generate energy, the front stage and the rear stage reaction means connected through a heat transfer means W.

4. **Claims 1-3, 6** are rejected under 35 U.S.C. 102(e) as being anticipated by **Rosen et al. (US 6213,234)**.

Rosen et al. disclose in the Figures 1 and 2 invention as claimed: an energy generating system comprising a front stage reaction means 32 receiving a row material in form of gasoline and air to generate a reaction product in form of hydrogen (the reaction product being different than raw material and having higher chemical energy than the raw material), CO, CO_2 and water by receiving mechanical power from the outside (i.e. pumping and compressing), and a rear stage reaction means 22 receiving the reaction product to generate energy including means converting mechanical energy to electric energy.

5. **Claims 1-3, 5,** and **7-11** are rejected under 35 U.S.C. 102(c) as being anticipated by **Sakamoto et al. (JP 08185880 A).**

Sakamoto et al. disclose in the Figures 1 and 2 invention as claimed: an energy generating system comprising a front stage reaction means 1 receiving a row material in form of fuel gases, steam and oxygen enriched air to generate a reaction product in form of hydrogen (the reaction product being different than raw material and having higher chemical energy than the raw material), CO, CO_2 and water by receiving mechanical power from the outside (i.e. piston 11), and a rear stage reaction means 2 receiving the reaction product to generate energy including means converting mechanical energy to electric energy.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 8, 10,11,** and **19-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rosen et al. (US 6213,234)** in view of **Lowther et al. (US 4,965,052).**

Rosen et al. disclose the system essentially as claimed. However, **Rosen et al.** do not disclose the front stage reaction means being a heating engine.

Lowther et al. disclose heat engine used as an "engine reactor" for the purpose of combining hydrocarbons and oxygen or water vapors (Re column 12, lines 17—23) to produced an enriched fuel for other use while simultaneously generating a mechanical output.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the system as taught by **Rosen et al.** and to provide the front stage reaction means in form of the heating engine as taught by **Lowther et al.** for the purpose of simplifying the system by combining the reforming process and power generation in a single machine.

Re claim 10, the combined system discloses all features essentially as claimed. However, it fails to disclose the variable drive valve for varying the compression ratio.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the variable drive valve for varying the compression ratio since it involves a known and commonly practiced method in the art of combustion engines.

8. **Claims 16-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sakamoto et al. (JP 08185880 A)** in view of **Kato et al. (JP 06219707 A)**.

Sakamoto et al. disclose the system essentially as claimed. However, **Sakamoto et al.** do not disclose the system heating and temperature control means.

Kato et al. disclose in paragraphs 0013-0016 the means for varying the supply ratio of plurality of raw materials and using the engine compression and ignition for heating and temperature control.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the system as taught by **Sakamoto et al.** and to provide the system heating and temperature control means as taught by **Kato et al.** for the purpose of reaching the self-ignition temperature when the engine is an ignition compression engine.

Response to Arguments

9. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

10. Applicant's arguments filed on April 8, 2000 have been fully considered but they are not persuasive. Examiner respectfully traverses applicant's statement that the front stage reaction means has the capability to perform mechanical-to-chemical conversion and vice-versa is neither taught nor suggested by Sakamoto et al. and/or Rosen et al.. Examiner directs applicant's attention to **Sakamoto et al.** disclosed reformer 1 that converts the mechanical energy of engine compression into chemical reaction in a pre-combustion chamber 5 in first mode and than producing mechanical power in expansion mode resulted from chemical reaction in the chamber. Similarly, **Rosen et al.** disclose the reformer 32 that converts the mechanical energy of the gas turbine engine compression into chemical reaction in first mode and than producing mechanical power in expansion mode resulted from chemical reaction in the second mode of operation.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Waks whose telephone number is (703) 308-1676. The examiner can normally be reached on Monday through Thursday 8 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor R Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

JOSEPH WAKS
PRIMARY PATENT EXAMINER
TC-2800

JW
May 28, 2003